

# INTEGRATED ASSESSMENT MODEL FOR ESTIMATING HEAT RELATED MORTALITY DUE TO GLOBAL CLIMATE CHANGE: RESULTS FROM THE INTARESE PROJECT

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**Background and Aim:** The INTARESE project developed a framework for integrated environmental assessment. We report findings from WP 3.7 "Climate" that developed a method to quantify heat-related mortality in Helsinki (population=570 thousand), London (population= 7.5 million) and Rome (population= 2.7 million), under current and future climates.

**Methods:** Published European pooled temperature-mortality functions were used to estimate age-specific heat-related summer mortality. Future populations were derived from national estimates scaled to age specific projections for the study area. Climate scenario data from regional climate models were used to estimate heat-related deaths in 2030 and 2050. Age-specific death rates were assumed constant and a policy scenario (introduction of heat prevention plan), was included in the model (reduction in mortality of 46% derived from an Italian multi-city study).

**Results:** Under the current climate, heat-related deaths during an "average" summer: were 58 (95%CI 15,106) in Rome, 180 (95%CI 15, 369) in London and 8 (95%CI 1,16) in Helsinki; while during a "hot" summer estimates rose to 477 (95%CI 123,865), 1320 (95%CI 110,2649) and 79 (95%CI 6,163) respectively. By 2030, "average" summer heat-related deaths are projected to rise to 120 (95%CI 33,214) in Rome, 259 (95%CI 20, 510) in London and 14 (95%CI 1,28) in Helsinki. With the introduction of policy (heat prevention plans) by summer 2030, deaths will be reduced to 65 in Rome, 141 in London and 8 in Helsinki.

**Conclusions:** Integrated models of climate change impacts are able to consider both climate and population scenarios (growth and ageing). There is limited information on effect modifiers which may reduce future impacts due to acclimatization (autonomous adaptation) or policy measures (planned adaptation). Using available evidence, we found that intervention measures may contribute in reducing the impacts of climate change on health.